

BEST AVAILABLE COPYSerial No. 09/807,878
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1. – 30. (canceled)

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31. (withdrawn from consideration) A cellular communications network comprising:

a call setup portion operable, in call setup process for setting up a call for a mobile station of the network, to allocate respective uplink and downlink channels between the mobile station and a first one of a plurality of base transceiver stations of the network, and to provide the mobile station and at least one further base transceiver station of said plurality, neighbouring said first base transceiver station, with call setup information for use by the mobile station and the or each said further base transceiver station to allocate respective uplink and downlink channels between the further base transceiver station concerned and the mobile station; and

a hand-off control portion operable initially, upon completion of the call setup process, to set said first base transceiver station to an active state, in which its said uplink and downlink channels are in use, and to set the or each said further base station to a dormant state in which the uplink and downlink channels of the further base transceiver station concerned are not in use, the hand-off control portion also being operable when, during the course of the call, it is determined that the mobile station should communicate with the, or one of the, further base transceiver stations, to employ such call setup information provided in the call setup process to bring about change of that further base transceiver station from said dormant state to said active state.

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32. (withdrawn from consideration) A network as claimed in claim 31, wherein said hand-off control portion is operable to identify a single base transceiver station that is to communicate with the mobile station at any one time during the course of said call.

33. (withdrawn from consideration) A network as claimed in claim 32, wherein said hand-off control portion is operable, when causing one of the base transceiver stations to change from said dormant state to said active state, to cause the base transceiver station that is currently in the active state to change to the dormant state.

34. (withdrawn from consideration) A network as claimed in claim 31, wherein said call setup portion is operable, in said call setup process, to cause the mobile station and the or each said further base transceiver station to exchange channel negotiation signalling for allocating said uplink and downlink channels therebetween.

35. (withdrawn from consideration) A network as claimed in claim 31, wherein said call setup information provided to the or each further base transceiver station and/or to the mobile station comprises one or more of the following:

service rate, channelisation code(s), scrambling code(s) of the uplink and/or downlink channels.

36. (withdrawn from consideration) A network as claimed in claim 31, wherein said hand-off control portion comprises:

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a monitoring portion, included in said mobile station, which provides respective signal measures for said first base transceiver station and the or each further base transceiver station, each signal measure serving to indicate the performance of a communications channel between the mobile station and the base transceiver station concerned; and

a base transceiver station selection portion which determines, in dependence upon said signal measures, with which of the base transceiver stations the mobile station should communicate.

37. (withdrawn from consideration) A network as claimed in claim 36, wherein said base transceiver station selection portion is also provided in the mobile station, and the mobile station is operable to include, in one or more uplink signals transmitted thereby, and uplink control message identifying one of the base transceiver stations with which the mobile station requests communication.

38. (withdrawn from consideration) A network as claimed in claim 37, wherein the mobile station transmits such an uplink control message in each frame of the channel signals between the mobile station and the base transceiver station with which it is in communication.

39. (withdrawn from consideration) A network as claimed in claim 38, wherein said uplink control message transmitted in each frame identifies the base transceiver station determined in dependence upon the signal measures produced based on the communications-channel performance in the preceding frame.

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40. (withdrawn from consideration) A network as claimed in claim 36, wherein said monitoring portion produces said signal measure for each base transceiver station based on a monitoring period of no longer than one frame of said communications channel.

41. (withdrawn from consideration) A network as claimed in claim 36 wherein, for the or each said base transceiver station that is in said dormant state, said signal measure indicates the performance of a downlink common control channel from the base transceiver station concerned to the mobile station.

42. (withdrawn from consideration) A network as claimed in claim 31, wherein the same uplink channel and/or the same downlink channel is/are assigned by the network to the mobile station for use in communicating with two or more of said base transceiver stations of said plurality.

43. (withdrawn from consideration) A network as claimed in claim 42, being a code-division multiple-access network, wherein the same set of codes is assigned to the mobile station for the uplink and/or downlink channels between it and two or more of said base transceiver stations of the network.

44. (currently amended) A mobile station, for use in a cellular communications network, comprising:

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a call setup information receiving portion, operable in a call setup process for setting up a call between the network and the mobile station, to receive from a first base transceiver station of the network call setup information for use by the mobile station to allocate, at call setup, respective an uplink channel and a downlink channels between the mobile station and the network, including at least one further base transceiver station of the network;

a call setup information storage portion which stores the received call setup information;
and

a hand-off control portion operable initially, following completion of said call setup process, to cause the mobile station to communicate with said first base transceiver station and operable when, during the course of the call it is determined that the mobile station should communicate with the, or one of the, further base transceiver stations, to employ the stored call setup information received in the call setup process to activate said uplink and downlink channels between the mobile station and that further base transceiver station.

45. (previously presented) A mobile station as claimed in claim 44, further comprising:

a monitoring portion which produces a signal measure for said first base transceiver station and for the or each further base transceiver station, which signal measure serves to indicate the performance of a communications channel between the mobile station and the base transceiver station concerned.

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46. (previously presented) A mobile station as claimed in claim 45, further comprising a base transceiver station selection portion which determines, in dependence upon said signal measures, with which of the base transceiver stations the mobile station should communicate.

47. (previously presented) A mobile station as claimed in claim 46, wherein the mobile station further comprises:

a message portion operable to include, in one or more uplink signals transmitted by the mobile station, an uplink control message identifying the or each determined base transceiver station.

48. (withdrawn from consideration) A base transceiver station, for use in a cellular communications network, comprising:

a call setup information receiving portion operable, in a call setup process for setting up a call between the network and a mobile station of the network that is currently being served by another base transceiver station of the network neighbouring the claimed base transceiver station, to receive call setup information relating to the call, for use by the claimed base transceiver station to allocate respective uplink and downlink channels between it and the mobile station;

a call setup information storage portion which stores the received call setup information;
and

a hand-off control portion operable initially, following completion of said call setup process, to maintain the claimed base transceiver station in a dormant state, in which said uplink and downlink channels are not in use, and, when it is determined by the network that the mobile

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station should communicate with the claimed base transceiver station, to employ the stored call setup information received in the call setup process to change the base transceiver station from said dormant state to an active state in which its said uplink and downlink channels are in use.

49. (withdrawn from consideration) A base transceiver station as claimed in claim 48, further comprising:

an uplink control message receiving portion operable, when the base transceiver station is in the active state, to detect, in an uplink signal transmitted by the mobile station to the base transceiver station, an uplink control message identifying a base transceiver station of the network with which the mobile station requests communication;

a comparison portion which compares the identity of the requested base transceiver station specified by the received uplink control message with its own base transceiver station identity; and

a status control portion which changes the base transceiver station from said active state to said dormant state if the requested base transceiver station identity is different from said own base transceiver station identity.

50. (withdrawn from consideration) A base transceiver station as claimed in claim 49, further comprising:

a new base transceiver station informing portion operable, when the requested base transceiver station identity is different from said own base transceiver station identity, to send to

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a base station controller of the network a message specifying the requested base transceiver station identity.

51. (withdrawn from consideration) A communications method for use in a cellular mobile communications network, comprising:

in a call setup process, for setting up a call for a mobile station of the network, allocating respective uplink and downlink channels between the mobile station and a first one of a plurality of base transceiver stations of the network, and providing the mobile station and at least one further base transceiver station of said plurality, which further base transceiver station neighbours said first base transceiver station, with call setup information for use by the mobile station and the or each said further base transceiver station to allocate respective uplink and downlink channels between the further base transceiver station concerned and the mobile station;

after completion of the call setup process, initially setting the first base transceiver station to an active state, in which said uplink and downlink channels between it and the mobile station are in use, and setting the or each further base transceiver station to a dormant state, in which said uplink and downlink channels between the further base transceiver station concerned and the mobile station are not in use;

and when, during the course of the call, it is determined that the mobile station should communicate with the, or one of the, further base transceiver stations, employing such call setup information provided in the call setup process to bring about change of that further base transceiver station from said dormant state to said active state.

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52. (withdrawn from consideration) A cellular communications network in which the same uplink channel and/or the same downlink channel is/are assigned by the network to a mobile station of the network for use in communicating with a plurality of base transceiver stations of the network, and the mobile station uses that/those same assigned channel(s) both before and after a hand-off operation in which the mobile station is handed off from one base transceiver station of said plurality to another base transceiver station of said plurality.

53. (withdrawn from consideration) A network as claimed in claim 52, being an analog network, wherein the same carrier frequency is assigned to the mobile station for communication in the uplink and/or downlink direction with all of the base stations of said plurality.

54. (withdrawn from consideration) A network as claimed in claim 52, being a Global System for Mobile Communication (GSM) network, wherein the same carrier frequency and the same time slot is assigned to the mobile station for communication in the downlink direction and/or uplink direction with all of the base transceiver stations of said plurality.

55. (withdrawn from consideration) A network as claimed in claim 52, being a Global System for Mobile Communication (GSM) network employing frequency hopping, wherein the same set of carrier frequencies and the same time slot and the same hopping sequence is assigned to the mobile station for communication in the uplink direction and/or downlink direction with all of the base transceiver stations of said plurality.

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56. (withdrawn from consideration) A network as claimed in claim 52, being a code-division multiple access (CDMA) network, wherein the same set of codes is assigned to the mobile station for use in communicating in the uplink direction and/or downlink direction with all of the base transceiver stations of said plurality.

57. (withdrawn from consideration) A network as claimed in claim 52, wherein the assignment to the mobile station of said same uplink channel and/or downlink channel is made when a call is set up between the network and the mobile station, and the same assigned channel(s) is/are used by the mobile station for communication with different base transceiver stations of said plurality for all or part of the duration of the call.

58. (withdrawn from consideration) A network as claimed in claim 52, wherein the same uplink channel and/or the same downlink channel is/are assigned by the network to the mobile station for use in communicating with substantially all of the base transceiver stations of the network.

59. (withdrawn from consideration) A network as claimed in claim 52, wherein the or each assigned channel is a traffic channel.

60. (withdrawn from consideration) A network as claimed in claim 52, wherein said hand-off operation is a soft hand-off operation in which said mobile station is in communication with more than one base transceiver station of the network.

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61. (withdrawn from consideration) A network as claimed in claim 31, wherein the assignment to the mobile station of said same uplink channel and/or downlink channel is made when a call is set up between the network and the mobile station, and the same assigned channel(s) is/are used by the mobile station for communication with different base transceiver stations of said plurality for all or part of the duration of the call.

62. (withdrawn from consideration) A cellular communications network comprising:

call setup means operable, in a call setup process for setting up a call for a mobile station of the network, to allocate respective uplink and downlink channels between the mobile station and a first one of a plurality of base transceiver stations of the network, and to provide the mobile station and at least one further base transceiver station of said plurality, neighbouring said first base transceiver station, with call setup information for use by the mobile station and the or each said further base transceiver station to allocate respective uplink and downlink channels between the further base transceiver station concerned and the mobile station; and

hand-off control means operable initially, upon completion of the call setup process, to set said first base transceiver station to an active state, in which its said uplink and downlink channels are in use, and to set the or each said further base station to a dormant state in which the uplink and downlink channels of the further base transceiver station concerned are not in use, the hand-off control means also being operable when, during the course of the call, it is determined that the mobile station should communicate with the, or one of the, further base transceiver

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stations, to employ such call setup information provided in the call setup process to bring about change of that further base transceiver station from said dormant state to said active state.

63. (currently amended) A mobile station, for use in a cellular communications network, comprising:

call setup information receiving means, operable in a call setup process for setting up a call between the network and the mobile station, to receive from a first base transceiver station of the network call setup information for use by the mobile station to allocate, at call setup, ~~respective-an uplink channel and a downlink channels~~ between the mobile station and the network, including at least one further base transceiver station of the network;

call setup information storage means for storing the received call setup information; and

hand-off control means operable initially, following completion of said call setup process, to cause the mobile station to communicate with said first base transceiver station and operable when, during the course of the call it is determined that the mobile station should communicate with the, or one of the, further base transceiver stations, to employ the stored call setup information received in the call setup process to activate said uplink and downlink channels between the mobile station and that further base transceiver station.

64. (withdrawn from consideration) A base transceiver station, for use in a cellular communications network, comprising:

call setup information receiving means operable, in a call setup process for setting up a call between the network and a mobile station of the network that is currently being served by

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another base transceiver station of the network neighbouring the claimed base transceiver station, to receive call setup information relating to the call, for use by the claimed base transceiver station to allocate respective uplink and downlink channels between it and the mobile station;

call setup information storage means for storing the received call setup information; and

hand-off control means operable initially, following completion of said call setup process, to maintain the claimed base transceiver station in a dormant state, in which said uplink and downlink channels are not in use, and, when it is determined by the network that the mobile station should communicate with the claimed base transceiver, to employ the stored call setup information received in the call setup process to change the base transceiver station from said dormant state to an active state in which its said uplink and downlink channels are in use.

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